November 25, 2003

To: Nebraska Infection Control Professionals

From: Nebraska Health and Human Services System, Richard A. Raymond, MD, Chief Medical Officer

Subject: Severe Acute Respiratory Syndrome (SARS): Preparing for possible re-emergence

**To contact a public health official regarding reportable diseases:**

| **Douglas County** | **Lancaster County** | **All other counties:** |
|---|---|---|
| **444-7214 (work hours)** | **441-8053 (work hours)** | **402-471-2937 (all hours)** |
| **444-7000 (after hours)** | **441-8000 (after hours, request Communicable Disease Program)** | |

**SARS planning and CDC guidance**

Although it is not known if SARS will re-emerge this winter, the CDC is concerned enough to recommend that we be prepared to respond. It is most likely that a re-emergence would occur in China, Hong Kong, or Taiwan. It is extremely unlikely that it will return for the first time in Nebraska. If there is a re-emergence of SARS anywhere in the world, we will have to be ready for possible importation via travelers. As we have learned from the experiences of China and Toronto, Canada, rapid identification of cases, isolation, and quarantine are our best defense.

The CDC published a draft community response plan that includes guidance for planning in various settings including hospitals. Because hospitals and other health care settings are at the greatest risk for the spread of SARS to health care workers, other patients, and visitors, we would like to encourage you to begin planning, if you haven't already done so. The CDC plan is very large and therefore will not be faxed or mailed. Instead, please examine the CDC SARS website for updated information and the draft plan at: http://www.cdc.gov/ncidod/sars/sarsprepplan.htm Please pay particular attention to Supplement C of the plan, which addresses preparedness and response in health care facilities (http://www.cdc.gov/ncidod/sars/pdf/smp_supplementc.pdf ).

CDC will be continually updating information. CDC also has plans to post more information and training materials to help teach the proper methods for donning and removing personal protective equipment (PPE). Updated information on infection control and exposure management can be found at http://www.cdc.gov/ncidod/sars/ic.htm .

**SARS hospital surveillance in the current setting of no known re-emergence**

Although it is unlikely that SARS will re-emerge in Nebraska or elsewhere in the United States, CDC recommends that we establish a SARS surveillance system in order to rapidly detect cases or clusters of severe unexplained pneumonia that could indicate the arrival of SARS.

- In the current situation, we request that you screen all severe hospitalized cases of atypical pneumonia (with radiographic evidence) of unknown cause by asking the following 3 questions and notifying your public health department if the answer is yes to any:
  1. In the 10 days before illness onset, travel to or close contact with other ill persons who recently traveled to a previously affected SARS area (China, Taiwan, or Hong Kong), or
  2. Employment as a healthcare worker, or
  3. Close contact with person(s) recently found to have radiographic evidence of pneumonia without an alternative diagnosis
- Consider posting visual alerts (in appropriate languages) at the entrances to all outpatient facilities (emergency departments, physicians' offices, outpatient clinics) requesting that patients inform healthcare personnel of

respiratory symptoms when they register for care and describing recommended "respiratory hygiene" precautions (detailed in the CDC draft guidance document).
- Ensure that clinicians know where and how to promptly report a potential SARS case to hospital and public health officials.

**SARS hospital surveillance in the setting of a re-emergence anywhere in the world**
In a setting where SARS has re-emerged anywhere in the world, surveillance would be intensified.

Basic Activities
- Continue to implement case detection and reporting efforts as detailed above and in Supplement B of CDC draft guidance plan which focuses on surveillance (http://www.cdc.gov/ncidod/sars/pdf/smp_supplementb.pdf ).
- Develop a strategy and assign responsibility for regularly updating clinicians and intake and triage staff on the status of SARS locally, nationally, and internationally.
- Train intake and triage staff on how to assess risks for SARS and use any applicable tools to screen patients.
- Educate clinical healthcare providers about the signs and symptoms of and current risk factors for SARS.
- Institute a strategy to monitor the health of staff and patients who are potentially exposed to SARS.
- Determine the threshold at which screening of persons entering the facility will be initiated and at what point screening will escalate from passive (e.g signs at the entrance) to active (e.g., direct questioning). Screening will likely need to be coordinated with access controls (see below). In addition to visual alerts, other potential screening measures include:
  - Priority triage of persons with respiratory symptoms
  - Triage stations outside the facility to screen patients before they enter
  - Telephone screening of patients with appointments
- Patients who present to emergency rooms or hospital clinics with a fever or symptoms of lower respiratory infection should be screened for SARS risk factors. Report any potential SARS cases or clusters of febrile respiratory illness among healthcare workers according to the guidance in Supplement B.

Enhanced Activities
- Develop plans to actively screen all persons entering the facility.
- Determine at what point the facility will open a designated "SARS evaluation center" to separate potential SARS patients from other patients seeking care at the healthcare facility (see Engineering Controls).

**Key clinical and epidemiologic features of SARS**
Infection by SARS coronavirus (SARS-CoV) causes severe, atypical pneumonia, and has a median incubation period of 4-6 days (range 2 – 10 days). Case fatality rates are highest in the elderly (approximately 50%). Initial symptoms include a prodrome of fever (>38C), myalgia, headache, shortness of breath, non-productive cough in most patients. (Diarrhea was also present in many patients.) Lower respiratory symptoms (clinical evidence of pneumonia, hypoxia, etc) appear 3 to 7 days following the prodrome. (Upper respiratory symptoms are typically absent.) In all confirmed SARS patients, a chest radiograph or CT scan showed evidence of atypical pneumonia within 7 days of onset of symptoms. Lymphopenia and elevated LDH and CK were common laboratory findings. For more information, see the CDC SARS website (http://www.cdc.gov/ncidod/sars ).

**Laboratory testing – recommended only in the event of a return anywhere in the world**
CDC and the Nebraska Public Health Laboratory (NPHL) can test for SARS Coronavirus (SARS-CoV) by polymerase chain reaction (RT-PCR) testing and detection of SARS-CoV antibody by enzyme immunoassay (EIA). Testing requires public health preapproval (contacts above) and only in specific situations where strong clinical and epidemiologic evidence suggests that SARS should be suspected. Tests done at commercial laboratories do not use the same reagents and will NOT be considered by CDC as confirmation of SARS. Following is a description of SARS laboratory tests.

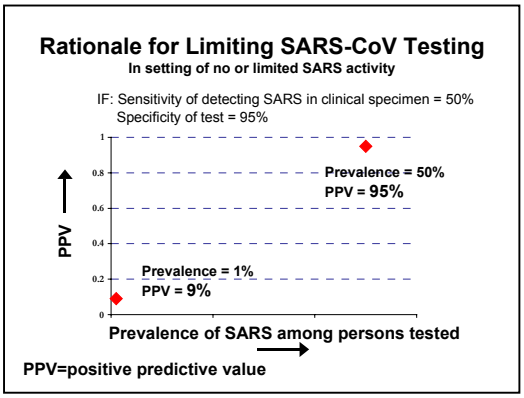
- Polymerase Chain Reaction (RT-PCR): Because virus is not consistently shed early in the disease, RT-PCR has poor sensitivity (50%). Sensitivity can be improved if multiple samples are tested over more than one day if SARS is strongly suspected. A negative RT-PCR will not rule out SARS.
- SARS-CoV antibody EIA: Antibody seroconversion occurs in most SARS patients by 28 days after disease onset (sometimes by 8-10 days), but is not useful in early diagnosis when isolation and treatment decisions must be made. Antibody seroconversion from negative to positive or a four-fold rise in antibody titer from acute to convalescent serum specimens confirms recent infection. SARS can be ruled out by a negative antibody test only if the specimen was taken at least 28 days after onset of symptoms.

- Viral Culture: Viral culture for SARS coronavirus must be done in a Biosafety Level 3 (BSL-3) laboratory. Culture was useful in identifying the virus initially, but will not be routinely performed for diagnosis because virus is not consistently shed early in the disease. A negative viral culture for SARS-CoV does not rule out SARS.

In the absence of SARS activity anywhere in the world, SARS testing will be used only in cases of clusters of severe unexplained atypical pneumonia in health care workers or recent (within 10 days) travelers to China, Hong Kong, or Taiwan.

If SARS returns anywhere in the world, surveillance will be heightened, and ill patients with a recent travel history to affected areas may be tested for SARS coronavirus in consultation with public health. However, because of the poor sensitivity of RT-PCR for detection of virus early in the disease, every effort should be made to identify alternative diagnoses.

Organisms to consider in the differential diagnosis of SARS include: Influenza A or B; tuberculosis; *Chlamydophila* (previously *Chlamydia*) *pneumoniae*; *Legionella pneumophila*; respiratory viruses such as RSV, adenovirus, parainfluenza; *mycoplasma pneumoniae*; psittacosis (especially in bird owners); *Coxiella burnetii* (Q fever); actinomycosis.




Antibody testing to rule out SARS may be done after 28 days, however decisions on isolation would obviously have to be made prior to that. Ruling out SARS should be done with caution and only with tests with high positive predictive value which explain the patient's illness well. Consider the following tests if SARS is suspected: Chest x-ray, blood culture, sputum gram stain, viral culture/DFA for respiratory pathogens, acid-fast stain, influenza antigen, urinary antigen for cryptococcus and legionella, serology for *M. pneumoniae, C. pneumoniae, Legionella*. If SARS re-emerges, we will send additional information regarding specimen collection, handling and transportation to the NPHL for approved tests. (For more information, see: http://www.cdc.gov/ncidod/sars/lab.htm )

**Infection control**

SARS can be transmitted while a patient is symptomatic, and up to 10 days following resolution of symptoms. Transmission occurs primarily through large droplets, but smaller droplet or airborne spread has occurred rarely. Therefore it is recommended that patients who are hospitalized be isolated in negative pressure rooms, if at all possible, with contact, droplet, and airborne isolation precautions. Procedures that cause aerosolization of patient secretions (such as nebulizer treatments) should be done in appropriate isolation areas with personal protection (e.g. TB precautions) for care providers. (For more information, see: http://www.cdc.gov/ncidod/sars/ic.htm )

**Case reporting**

As a friendly reminder, reporting of suspected cases of SARS is required by Title 173 Neb. Admin. Code, ch. 1 section 1-003.01B (Clusters, Outbreaks or Unusual Events). This regulation states that "clusters, outbreaks, or unusual events" fall under reportable communicable diseases and should be reported to public health authorities immediately. It is vital that cases be recognized and isolated quickly in order to prevent spread to health care providers and other close contacts of patients. Notifying your local health department in addition to the State is encouraged, but not mandatory. Your local health department has been given information on SARS and may contact you to work with you on planning.